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0226692.2 15 November 2002 (15.11.2002) GB
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- Published:**
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(54) Title: METHOD OF FORMING A VIBRATION DAMPING COATING ON A METALLIC SUBSTRATE

(57) Abstract: A method of forming a vibration damping coating on a metallic substrate, e.g. a titanium alloy aerospace component, comprises applying to the metallic substrate a coating comprising a spinel having regions of relative oxide or nitride imbalance.

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INTERNATIONAL SEARCH REPORT

PCT/GB 03/04359

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C23C4/10 F01D25/04 C01F7/16

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C23C F01D C01F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, COMPENDEX, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2002/122718 A1 (MOTHERWELL ANDREW ET AL) 5 September 2002 (2002-09-05) cited in the application paragraph '0007! - paragraph '0009!; claims	1-11, 24, 25
X	LALLEMAND G ET AL: "Fabrication process of spinel powder for plasma spraying" JOURNAL OF THE EUROPEAN CERAMIC SOCIETY, ELSEVIER SCIENCE PUBLISHERS, BARKING, ESSEX, GB, vol. 18, no. 14, 1 December 1998 (1998-12-01), pages 2095-2100, XP004144421 ISSN: 0955-2219 2.Experimental procedure, 3.3 Evolution of the composition table 3	1, 3-9, 11, 12, 15-18, 23

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☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the International filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the International filing date but later than the priority date claimed

- *T* later document published after the International filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- *G* document member of the same patent family

Date of the actual completion of the International search

26 May 2004

Date of mailing of the International search report

08/06/2004

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INTERNATIONAL SEARCH REPORT

PCT/GB 03/04359

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3 927 223 A (TAKABATAKE MITSUO ET AL) 16 December 1975 (1975-12-16) claims; example 1 ----	1,3-9, 11,12, 15-18,23
X	WO 01/00539 A (DECKER JENS ;JANSING THOMAS (DE); SIEMENS AG (DE); SCHUERHOLT GUEN) 4 January 2001 (2001-01-04) page 10, line 25 - line 34; claims ----	1-11
X	PATENT ABSTRACTS OF JAPAN vol. 1995, no. 03, 28 April 1995 (1995-04-28) & JP 06 345551 A (NIPPON STEEL CORP;OTHERS: 01), 20 December 1994 (1994-12-20) abstract -----	12,15-23

INTERNATIONAL SEARCH REPORT

PCT/GB 03/04359

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☒ Claims Nos.: 26-29
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
see FURTHER INFORMATION sheet PCT/ISA/210
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: 26-29

Present claims 26-29 define a method, articles and a use by reference to the example. It is however not possible to determine from this definition, which combination of features the claims are seeking to protect. Thus a lack of clarity within the meaning of Article 6 PCT arises to such an extent as to render a meaningful search of the claims impossible. Consequently, the search has not been carried out for these claims.

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

INTERNATIONAL SEARCH REPORT

PCT/GB 03/04359

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 2002122718	A1	05-09-2002	GB 2373024 A	11-09-2002
US 3927223	A	16-12-1975	JP 878675 C	31-08-1977
			JP 49007313 A	23-01-1974
			JP 52006291 B	21-02-1977
			DE 2323953 A1	22-11-1973
			FR 2190754 A1	01-02-1974
			GB 1399695 A	02-07-1975
WO 0100539	A	04-01-2001	AT 238249 T	15-05-2003
			AU 6148000 A	31-01-2001
			CA 2377078 A1	04-01-2001
			WO 0100539 A2	04-01-2001
			DE 50001898 D1	28-05-2003
			EP 1204619 A2	15-05-2002
			JP 2003503601 T	28-01-2003
			US 6723442 B1	20-04-2004
JP 06345551	A	20-12-1994	NONE	